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(54) **ACOUSTIC PROCESSING FOR ESTIMATING SIZE OF SMALL TARGETS**

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(58) **Field of Search** 367/7, 11, 99, 367/131; 600/443; 73/606

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(57) **ABSTRACT**

A method is provided for estimating the size of an object from a region of a fluid medium when that object is emitting acoustic radiation of known wavelength λ on its own or as the result of being interrogated by acoustic pulses that reflect from the object. The acoustic radiation is monitored using a line array of N acoustic receivers such that N signals indicative of the acoustic radiation are generated. M time series summations are formed using the N signals. Each of the M time series summations is formed using a unique time delay predicated on a corresponding unique estimated speed of propagation of the acoustic radiation where M estimated speeds of propagation are defined. For an object in the region having a diameter D on the order of λ, the M values will vary as a function of the M estimated speeds of propagation with the resulting distribution of the M values being indicative of diameter D.

11 Claims, 3 Drawing Sheets